

Abstract

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Serum micronutrient concentrations and decline in physical function among older persons.

Bartali B, Frongillo EA, Guralnik JM, Stipanuk MH, Allore HG, Cherubini A, Bandinelli S, Ferrucci L, Gill TM.

Division of Nutritional Sciences, Cornell University, Ithaca, New York, USA.

CONTEXT: Maintaining independence of older persons is a public health priority, and identifying the factors that contribute to decline in physical function is needed to prevent or postpone the disablement process. The potential deleterious effect of poor nutrition on decline in physical function in older persons is unclear.

OBJECTIVE: To determine whether a low serum concentration of micronutrients is associated with subsequent decline in physical function among older men and women living in the community.

DESIGN, SETTING, AND PARTICIPANTS: Longitudinal study of 698 community-living persons 65 years or older who were randomly selected from a population registry in Tuscany, Italy. Participants completed the baseline examination from November 1, 1998, through May 28, 2000, and the 3-year follow-up assessments from November 1, 2001, through March 30, 2003. MAIN

OUTCOME MEASURE: Decline in physical function was defined as a loss of at least 1 point in the Short Physical Performance Battery during the 3-year follow-up. Odds ratios (ORs) were calculated for the lowest quartile of each nutrient using the other 3 quartiles combined as the reference group. Two additional and complementary analytical approaches were used to confirm the validity of the results.

RESULTS: The mean decline in the Short Physical Performance Battery score was 1.1 point. In a logistic regression analysis that was adjusted for potential confounders, only a low concentration of vitamin E (<1.1 microg/mL [<24.9 micromol/L]) was significantly associated with subsequent decline in physical function (OR, 1.62; 95% confidence interval, 1.11-2.36; $P = .01$ for association of lowest alpha-tocopherol quartile with at least a 1-point decline in physical function). In a general linear model, the concentration of vitamin E at baseline, when analyzed as a continuous measure, was significantly associated with the Short Physical Performance Battery score at follow-up after adjustment for potential confounders and Short Physical Performance Battery score at baseline ($\beta = .023$; $P = .01$). In a classification and regression tree analysis, age older than 81 years and vitamin E (in participants aged 70-80 years) were identified as the strongest determinants of decline in physical function (physical decline in 84% and 60%, respectively; misclassification error rate, 0.33).

CONCLUSIONS: These results provide empirical evidence that a low serum concentration of vitamin E is associated with subsequent decline in physical function among community-living older adults. Clinical trials may be warranted to determine whether an optimal concentration of vitamin E reduces functional decline and the onset of disability in older persons.

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